IN THE CLAIMS:

Please cancel all pending claims without prejudice or disclaimer of the subject matter thereof and add the following claims, renumbered as Claims 38-93.

38. (New) A process for producing lipids comprising:

(a) growing euryhaline microorganisms in a fermentation medium, wherein said euryhaline microorganism has exponential growth rate of at least about 5 doublings per day at 25 °C; and

(b) extracting lipids from said euryhaline microorganisms.

39. (New) The process of Claim 38, wherein said euryhaline microorganism has exponential growth rate of at least about 7 doublings per day at 30 °C.

40. (New) The process of Claim 38, wherein a sodium ion concentration in said fermentation medium is 60% of the sodium ion concentration of seawater.

41. (New) The process of Claim 40, wherein said euryhaline microorganisms are capable of producing about 1.08 grams per liter per day of long chain omega-3 fatty acids per 40 grams of sugar per liter of said fermentation medium.

42. (New) The process of Claim 38, wherein said euryhaline microorganism is a microorganism of the order Thraustochytriales.

43. (New) The process of Claim 42, wherein said euryhaline microorganism is selected from the group consisting of *Thraustochytrium*, *Schizochytrium*, and mixtures thereof.

44. (New) The process of Claim 43, wherein said euryhaline microorganism is selected from the group consisting of ATCC 20888, ATCC 20889, ATCC 20890, ATCC 20891, ATCC 20892, and mixtures thereof.

45. (New) The process of Claim 38, wherein about 20% or less of the total fatty acid in said lipid is omega-6 fatty acids.

46. (New) The process of Claim 38, wherein at least about 49% of the total fatty acid of said lipid is omega-3 fatty acids.

47. (New) The process of Claim 38, wherein the ratio of DHA to EPA in said lipid is about 7.07 or less.

48. (New) The process of Claim 38, wherein at least about 64.5% of omega-3 fatty acid in said lipid is DHA.

49. (New) The process of Claim 38, wherein at least about 86% of omega-3 fatty acid in said lipid is DHA.

50. (New) The process of Claim 38, wherein the ratio of EPA to DHA in said lipid is from about 1:1 to about 1:30.

51. (New) The process of Claim 38, wherein the ratio of DPA to DHA in said lipid is at least about 1:12.

52. (New) The process of Claim 38, wherein the total fatty acid composition in said lipid comprises about 5% or less of C20:4w6 fatty acid.

53. (New) A process for producing lipids comprising:

(a) growing euryhaline microorganisms in a fermentation medium, wherein said euryhaline microorganisms are capable of

producing about 1.08 grams per liter per day of long chain omega-3 fatty acids per 40 grams of sugar per liter at a sodium ion concentration of 60% seawater; and

(b) extracting lipids from said euryhaline microorganisms.

54. (New) The process of Claim 53, wherein said euryhaline microorganism has exponential growth rate of at least about 5 doublings per day at 25 °C.

55. (New) The process of Claim 53, wherein said euryhaline microorganism has exponential growth rate of at least about 7 doublings per day at 30 °C.

56. (New) The process of Claim 53, wherein said euryhaline microorganism is a microorganism of the order Thraustochytriales.

57. (New) The process of Claim 56, wherein said euryhaline microorganism is selected from the group consisting of *Thraustochytrium*, *Schizochytrium*, and mixtures thereof.

58. (New) The process of Claim 57, wherein said euryhaline microorganism is selected from the group consisting of ATCC 20888, ATCC 20889, ATCC 20890, ATCC 20891, ATCC 20892, and mixtures thereof.

59. (New) The process of Claim 53, wherein about 20% or less of the total fatty acid in said lipid is omega-6 fatty acids.

60. (New) The process of Claim 53, wherein at least about 49% of the total fatty acid of said lipid is omega-3 fatty acids.

61. (New) The process of Claim 53, wherein the ratio of DHA to EPA in said lipid is about 7.07 or less.

62. (New) The process of Claim 53, wherein at least about 64.5% of omega-3 fatty acid in said lipid is DHA.

63. (New) The process of Claim 53, wherein at least about 86% of omega-3 fatty acid in said lipid is DHA.

64. (New) The process of Claim 53, wherein the ratio of EPA to DHA in said lipid is from about 1:1 to about 1:30.

65. (New) The process of Claim 53, wherein the ratio of DPA to DHA in said lipid is at least about 1:12.

66. (New) The process of Claim 53, wherein the total fatty acid composition in said lipid comprises about 5% or less of C20:4w6 fatty acid.

67. (New) A process for producing lipids comprising:

(a) growing euryhaline microorganisms in a fermentation medium, wherein a sodium ion concentration in said fermentation medium is 60% of the sodium ion concentration of seawater; and

(b) extracting lipids from said euryhaline microorganisms.

68. (New) The process of Claim 67, wherein said euryhaline microorganism has exponential growth rate of at least about 5 doublings per day at 25 °C.

69. (New) The process of Claim 67, wherein said euryhaline microorganism has exponential growth rate of at least about 7 doublings per day at 30 °C.

70. (New) The process of Claim 67, wherein said euryhaline microorganisms are capable of producing about 1.08 grams per liter per day of long chain omega-3 fatty acids per 40 grams of sugar per liter of said fermentation medium.

71. (New) The process of Claim 67, wherein said euryhaline microorganism is a microorganism of the order Thraustochytriales.

72. (New) The process of Claim 71, wherein said euryhaline microorganism is selected from the group consisting of *Thraustochytrium*, *Schizochytrium*, and mixtures thereof.

73. (New) The process of Claim 72, wherein said euryhaline microorganism is selected from the group consisting of ATCC 20888, ATCC 20889, ATCC 20890, ATCC 20891, ATCC 20892, and mixtures thereof.

74. (New) The process of Claim 67, wherein about 20% or less of the total fatty acid in said lipid is omega-6 fatty acids.

75. (New) The process of Claim 67, wherein at least about 49% of the total fatty acid of said lipid is omega-3 fatty acids.

76. (New) The process of Claim 67, wherein the ratio of DHA to EPA in said lipid is about 7.07 or less.

77. (New) The process of Claim 67, wherein at least about 64.5% of omega-3 fatty acid in said lipid is DHA.

78. (New) The process of Claim 67, wherein at least about 86% of omega-3 fatty acid in said lipid is DHA.

79. (New) The process of Claim 67, wherein the ratio of EPA to DHA in said lipid is from about 1:1 to about 1:30.

80. (New) The process of Claim 67, wherein the ratio of DPA to DHA in said lipid is at least about 1:12.

81. (New) The process of Claim 67, wherein the total fatty acid composition in said lipid comprises about 5% or less of C20:4w6 fatty acid.

82. (New) A food product comprising:

(a) said lipids of Claim 53; and

(b) food material.

83. (New) The food product of Claim 82, wherein said food material is animal food.

84. (New) The food product of Claim 82, wherein said food material is human food.

85. (New) The food product of Claim 82, wherein about 20% or less of the total fatty acid in said lipid is omega-6 fatty acid.

86. (New) The food product of Claim 82, wherein said lipid comprises at least about 49% by weight of omega-3 fatty acid.

87. (New) The food product of Claim 82, wherein the ratio of C20:5w3 to C22:6w3 in said lipid is from about 1:1 to about 1:30.

88. (New) The food product of Claim 82, further comprising an antioxidant.

89. (New) A nutritional supplement comprising lipids of Claims 53.

90. (New) The nutritional supplement of Claim 89, wherein about 20% or less of total fatty acid in said lipid is omega-6 fatty acid.

91. (New) The nutritional supplement of Claim 89, wherein said lipid comprises at least about 49% by weight of omega-3 fatty acid.

92. (New) The nutritional supplement of Claim 89, wherein the ratio of C20:5w3 fatty acid to C22:6w3 fatty acid in said lipid is from about 1:1 to about 1:30.

93. (New) The nutritional supplement of Claim 89 further comprising an antioxidant.